

# Diaphragm filter cleaning process

Description OF DE19502516

The invention refers to a procedure for the diaphragm filtration according to requirement 1 of the principal patent DE 44 13 640 cl.

In the course of the advancement it showed itself that the system also for the production of a filtrate stream from liquid media such as emulsions, juices and mashes, like it z. B. in food industry occur, is in the best way suitable. Also it can concern with the liquid medium beer or milk.

For production one to a large extent bacterium and alga-free filtrate stream from liquid medium membrane filter plants are well-known, which are based on the so-called shunt current principle. A liquid medium with high speed is through-pumped by a tubing diaphragm, whereby the developing lining on the diaphragm by the flow direction constantly slowly carried on and thus a fast added to the diaphragm is avoided. The filtrate passes through outward the tubing diaphragm and in a jacket pipe is caught.

These filter systems are frequently unsuitable for food industry, since the large quantity of the liquid medium necessary for the procedure is not available.

The moreover filter procedures are well-known, with which the liquid medium is sent in this way in individual, successive loads by a paper band filter and filtrate is produced. The paper volume keeps running after the filtration of each load automatically.

With this procedure the constant consumption of filter paper and the associated current operating cost are unfavorable. In addition the liquid medium must be transported first from the storage vessel to the paper band filter, to which z. T. a substantial machine expenditure is necessary.

3 invention indicated in the patent claims 1, 2 and is the basis of the problem, also with small quantities of food or luxuries to have and the machine expenditure as well as the current operating cost minimized get along cooling agent or contaminated water.

This problem is solved by in the patent claims the 1, 2 and 3 specified characteristics.

Substantial a component of the membrane filter system is a filter element, which is brought with the filter enterprise directly into the storage vessel, which contains the liquid medium. Thus an additional supply pump becomes redundant. In addition the filter element can be trained due to its conception in size and form almost at will and be adapted thus to different storage vessels.

As soon as the filter diaphragm adds itself, the complete filter element is lifted with the help of a lifting device from the liquid medium and led past a fluid jet. An accordingly trained nozzle fans out the jet, so that it can remain over the whole width of the filter elements. The particles deposited on the diaphragm surface, fat or colloid layer is down-rinsed by the fluid jet. After that free rinses the cleaned filter element is lowered again into the medium and brings back the original filtrate achievement.

During an arrangement according to requirement 4 between filter element and storage vessel a trap is pushed, as soon as the filter element from the storage vessel with the liquid medium was lifted out. The fluid jet is only then switched on. The rinsing off liquid is caught in the trap and derived separately. A pollution of the liquid medium with rinsing off liquid is avoided in this way. Before the lowering of the filter elements into the storage vessel the trap is again taken off.

During an arrangement according to requirement 5 the filter element is moved away by its position over the liquid medium and led across a trap, as soon as it was lifted out from the medium. Only then the fluid jet is switched on. The rinsing off liquid is caught in the trap and derived separately. After completion of the free rinsing procedure the filter element is led again across the liquid medium and lowered afterwards into this.

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## Claims OF DE19502516

1. Procedure for the diaphragm filtration of liquid medium, with that
  - a filterelement directly into a basin, consisting of filterdiaphragm and mother board, coagulates or into an other storage vesselis brought,
  - for the filtrate production between filter diaphragm and motherboard by means of a pump a negative pressure is produced and
  - the filter diaphragm intervallweise fluid jet hitting by one thediaphragm surface is free-rinsed from the outside (after principalpatent P 44 13 640.by the fact 4-41) characterized that the liquid medium is a food or aluxury.
2. Procedure according to requirement 1, by the fact characterized thatthe food or luxury is carrot mash, milk, beer or juice.
- 3.Procedure for the diaphragm filtration of liquid medium, with that
  - a filterelement directly into a basin, consisting of filterdiaphragm and mother board, coagulates or into an other storage vesselis brought,
  - for the filtrate production between filter diaphragm and motherboard by means of a pump a negative pressure is produced and
  - the filter diaphragm intervallweise fluid jet hitting by one thediaphragm surface is free-rinsed from the outside (after principalpatent P 44 13 640.by the fact 4-41) characterized that the liquid medium is a coolingagent.
- 4.Procedure for the diaphragm filtration of liquid medium, like wastewater, by
  - a filterelement directly into a basin, consisting of filterdiaphragm and mother board, coagulates or into an other storage vesselis brought,
  - for the filtrate production between filter diaphragm and motherboard by means of a pump a negative pressure is produced and
  - the filter diaphragm intervallweise fluid jet hitting by one thediaphragm surface is free-rinsed from the outside (after principalpatent P 44 13 640.by the fact 4-41) characterized that the liquid medium contaminatedwater, as dump seeping water is.
- 5.Procedure according to the requirements 1, 2 or 3, with which thefilterelement is lifted to free rinses with a

lifting device from the liquid medium and led past a fluid jet, by the fact characterized that

- before connecting the liquid jet between the filter element and the liquid medium a trap is pushed, the free rinsing liquid catches and goes on and such a Hineinlaufen of the free rinsing liquid into the liquid medium prevented, and
- one removes after completion of the free rinsing procedure before the lowering of the filter element into the liquid medium the Auffangvorrichtung again.

6. Procedure according to the requirements 1, 2 or 3, with which the filter element is lifted to free rinses with a lifting device from the liquid medium and led past a fluid jet, by the fact characterized that

- before connecting the liquid jet the filter element from the liquid medium it is removed and led across a trap which catches and separately derives the free rinsing liquid, whereby a Hineinlaufen of the free rinsing liquid is prevented into the liquid medium, and
- one leads after completion of the free rinsing procedure the filter element again across the liquid medium and one lowers into the same.

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